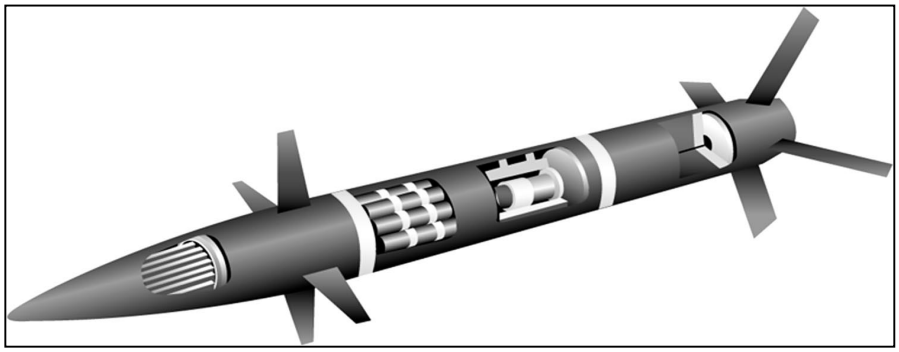
EX-171 EXTENDED RANGE GUIDED MUNITION (ERGM)



The EX-171 Extended Range Guided Munition (ERGM) is a gun launched 5-inch, rocket-assisted, cargo projectile which carries and dispenses 72 EX-1 Dual-Purpose Improved Conventional Munitions (DPICM) grenades over the target in a preset impact pattern. The DPICM grenades damage the target through either fragmentation or shaped-charge jet penetration. Using a special high-energy propelling charge (EX-167), it is designed to extend Naval Surface Fire Support (NSFS) to ranges beyond 40 nautical miles. The ERGM is a precision-guided munition that uses a coupled Global Positioning System (GPS) and Inertial Navigation System (INS) guidance system and aerodynamic flight control surfaces to steer the projectile to the pre-selected payload expel/dispense point.

The ERGM is designed to provide highly responsive precision engagement of threats to U.S. Marine Corps or U.S. Army ground combat forces operating ashore, prior to the establishment of organic fire support assets, and to supplement organic field artillery once it is ashore.

BACKGROUND INFORMATION

The ERGM Operational Requirements Documents (ORD) and Test and Evaluation Master Plan (TEMP) were approved in FY96, prior to a Milestone II decision that also occurred that year. The development program encountered significant technical hurdles soon thereafter. In particular, difficulties were experienced with hardening sensitive components of the GPS-INS guidance system to the accelerations experienced in gun-launch, developing a mid-body obturator band (seals the propelling charge gases) and the functioning and lethality of the developmental EX-1 DPICM grenades. Also, design flaws were discovered in the baseline rocket motor design. The program notified the acquisition executive that it expected to breach the acquisition program baseline in FY98. The program was restructured, and a new acquisition decision memorandum was issued in FY00. The original (FY96) ERGM ORD and TEMP have not yet been updated but are currently undergoing review and revision with DOT&E participation.

TEST & EVALUATION ACTIVITY

The program is currently conducting developmental testing. A limited functionality control test vehicle (CTV-1) was successfully launched in early FY01. The current plan calls for several more flight test events prior to the Critical Design Review. This will be followed by a formal qualification program

consisting of performance, safety, and environmental testing. These events will also be used to help assess the validity of several models and simulations under development to supplement operational testing by COMOPTEVFOR. TECHEVAL is scheduled for 2QFY04, followed by OPEVAL scheduled for 1QFY05.

TEST & EVALUATION ASSESSMENT

The ERGM is a single component of a very complex NSFS system. Timely target acquisition, fire support coordination, and terminal performance of ERGM are special areas of concern for this system. DOT&E's objective is to exercise the entire naval fire support system in a realistic manner in order to evaluate the operational effectiveness, suitability and lethality of the ERGM round.

Naval gunfire range limitations pose a substantial challenge to realistic operational testing. No current NSFS test or training range will allow engagement of realistic targets with live ERGM rounds because of the large hazard footprint. DOT&E is examining alternative analytical evaluation approaches proposed by COMOPTEVFOR that link shipboard firing of inert submunition or telemetry rounds, and land-based firing of live tactical rounds against realistic targets.

Because there is no warhead-compatible telemeter available, developmental testing of ERGM is conducted by firing the round with either the tactical submunition payload or the instrumentation section. Since this does not allow for full-system evaluation from a single round, additional test rounds are required. DOT&E is assisting the program office in attempting to integrate a warhead-compatible Hardened Subminiature Telemetry and Sensor System technology into the ERGM projectile. If this approach proves successful, the mix of tactical and instrumentation rounds previously described for OPEVAL may be altered.

Emerging data and analyses recommend closer examination of the lethal effects of extremely small fragments from DPICM and other submunitions. DOT&E will evaluate the lethality of the EX-1 submunitions against the full range of expected personnel and materiel targets in realistic operational environments.